What is claimed is:

1. A system for locating a specific value contained in an array of N data values, the specific value being the result of a binary operation defined over the array of N data values wherein each data value is W bits wide, the system comprising a plurality of decision units grouped in successive computation stages wherein:
   (a) each decision unit receives a pair of input values, each input value containing a data value and a partial address; and
   (b) each decision unit generates a value representative of a selected data value and the partial address of the selected data value and the decision unit of the last computation stage contains the specific value.

2. The system of claim 1 wherein each of the plurality of decision units comprises:
   (a) a binary operator for generating a binary decision representative of a local address of the selected data value; and
   (b) a multiplexer for generating one of the pair of input values as output and with the output being selected by the binary decision.

Sub a2

3. ~~The system of claim 2 wherein the binary operator selects the minimum value of the pair of data values contained in the pair of input values.~~

4. ~~The system of claim 2 wherein the binary operator selects the maximum value of the pair of data values contained in the pair of input values.~~

5. ~~The system of claim 1 wherein each of the plurality of decision units further comprises:~~
   ~~(c) a storage element for storing the output of a multiplexer and the binary decision which is added to the partial address of the selected data value.~~

Sub a3

6. ~~The system of claim 5 wherein the partial address of an input value at computation stage i is the $(i-1)$ most significant bit of the storage element of computation stage $(i-1)$.~~

7. ~~The system of claim 5 wherein the partial address of an input value at computation stage i is the $(i-1)$ least significant bit of the storage element of computation stage $(i-1)$.~~

Sub B1

8. ~~The system of claim 1 wherein the number of computation stages K is related to the size N of the array of data values by the formula $K = \log_2 N$.~~

9. The system of claim 8 wherein the number of decision units at a computation stage i is equal to $N/2^i$ and wherein $1 \le i \le K$.

10. The system of claim 8 wherein the last computation stage contains the address of the specific value in the K most significant bits of its associated storage element and the specific value is contained in the W least significant bits of said associated storage element.

11. The system of claim 8 wherein the last computation stage contains the address of the specific value in the K least significant bits of its associated storage element and the specific value is contained in the W most significant bits of said associated storage element.

Sub A4

12. An apparatus for obtaining information on a specific value within a pair of inputs, wherein each input contains a data value and a partial address of the data value, the apparatus comprising:

(a) a binary operator which compares the data values and which generates as output a binary decision representative of a local address of the specific data value; and

(b) a multiplexer which generates as output the specific data value along with its partial address based on the binary decision.

13. The apparatus of claim 12 further comprising:

 (c) a storage element which stores the output of the multiplexer and the binary decision.

14. The apparatus of claim 12 wherein the binary operator is a minimum operator.

15. The apparatus of claim 12 wherein the binary operator is a maximum operator.

16. In an array of N data values, a method of determining an address for a result, the result being the output of a binary operation defined in the array of data values each data value having *W* bits, the method comprising the steps of:

 (a) performing, at each computation stage *i* of $\log_2 N$ computation stages, $N/2^i$ binary operations on the data values of $N/2^i$ pairs of input values wherein each of the binary operations generates a binary decision representative of a local address of a selected data value within the pair of input values; and

 (b) multiplexing at each computation stage each pair of input values and producing an output determined by the binary decision.

17. The method of claim 16 further comprising the step of

    (c) storing at each computation stage the binary decision and the selected input in a storage element.

Sub E1

18. The method of claim 16 wherein the computation stage at level $\log_2 N$ contains the value of the result of the binary operation and its address within the array of values.

19. The method of claim 16 wherein the binary operation is a minimum finding operation.

20. The method of claim 16 wherein the binary operation is a maximum finding operation.

21. A method for finding a specific value in an array of data values, the method comprising the steps of:

    (a) grouping a plurality of decision units in a plurality of computation stages wherein the number of decision units in a computation stage at level i is equal to $N/2^i$, N being the size of the array; and

    (b) processing the data values in each decision unit;

    wherein a decision unit at a last computation stage determines the specific value.

22. The method of claim 21 wherein each decision unit receives a pair of input values and generates as output a selected data value.

23. The method of claim 22 wherein the selected data value is the result of a binary operation performed on the pair of input values.

24. The method of claim 23 wherein the binary operation is a minimum finding operation.

25. The method of claim 23 wherein the binary operation is a maximum finding operation.